

EPA Region 5 Records Ctr.



355645

CLOSURE AND POST CLOSURE PLAN
FOR
OIL REMOVAL LAGOONS AT JOHN DEERE FOUNDRY EAST MOLINE

NOVEMBER, 1981

D. WETHINGTON
UTILITIES ENGINEERING

PREFACE

What follows is a step-by-step plan to deal with the clean-up of the two oil separation lagoons, located on Deere property but used exclusively by the former Rock Island Railroad and the current owner of the property, Chrome Crankshaft Locomotive Company as industrial wastewater pre-treatment facilities.

This document is no more than a proposed method of dealing with the clean-up of the lagoons. Many assumptions (including the requirement to do anything) had to be made to develop the total plan in the detail presented. As such, this plan is not to be construed as a commitment by Deere & Company for action. Rather, it was developed to obtain a response from IL EPA on the environmental suitability of such a plan.

CLOSURE AND POST CLOSURE PLAN
FOR
OIL REMOVAL LAGOONS AT JOHN DEERE FOUNDRY EAST MOLINE

OBJECTIVES

1. Eliminate discharges of untreated industrial wastewater onto Deere property.
2. Remove from Deere property, waste oil and all contaminated water, sludge and earth from two existing lagoons in the most economical and environmentally safe manner.
3. Reclaim the lagoon sites by filling in the excavations with foundry sand.

STEP 1...SITE SURVEY & ANALYTICAL TESTING

Field measurements of the two lagoons are to be obtained to determine the following quantities:

- a. Volume of floating oil.
- b. Volume of water.
- c. Volume of oily sludge.
- d. Volume of oil-contaminated earth.

The first three determinations can be established with reasonable accuracy through direct field measurements. The last item, (d), is somewhat more difficult to define. The determination of this quantity or rather, the establishment of subjective criteria which "defines" contaminated earth will be defined following review of data of subsurface explorations.

It is envisioned that the site survey consist of the following activities: (duplication of activity or analysis is required for the second lagoon).

1. Measure pond dimensions, depth of oil, depth of water and depth of sludge. Since depths will vary, all dimensions should be taken over a pre-determined sampling and measurement grid and then use average values to complete the calculations.
2. Sample collection as follows:
 - a. Oil sample.

A composite sample of floating oil, collected from the sampling and measurement grid locations, is to be made and submitted for total PCB analysis.

A split sample of the above is to be submitted to Waterloo Component Works so that they may determine oil reclaim potential of this waste.

- b. Water sample.

A composite water sample, collected in a manner similar to that described above, is to be made and submitted for the following analyses:

Cadmium as Cd, mg/l
Total Chromium as Cr, mg/l
Hex. Chromium as Cr, mg/l
Copper as Cu, mg/l
Lead as Pb, mg/l

PH, standard units
Oil & Grease, mg/l
TC/IC/TOC as C, mg/l
TSS, mg/l
Nickel as Ni, mg/l
Zinc as Zn, mg/l

Extreme care should be taken to avoid penetration of the floating oil layer by the sampling vessel during sample collection.

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c. Sludge sample.

A composite sludge sample, collected from the sampling grid as before, shall be prepared and submitted for the following analysis:

Total Solids, % wt.	Total Cadmium as Cd mg/g
Oil Content, % wt.	Total Chromium as Cr, mg/g
Ash Content, % wt.	Total Copper as Cu, mg/g
Total Zinc as Zn, mg/g	BTU Content, BTU/lb.
Total PCB, ug/g	Total Lead as Pb, mg/g
Total Nickel as Ni, mg/g	
E.P. Toxicity, analyzed for all of the above heavy metals, mg/l.	

3. Subsurface exploration should be conducted in the vicinity of each lagoon to determine soil composition, ground water elevation and extent of soil contamination. The specific procedures, techniques and samples to be collected and analyzed will be jointly developed by the owner and consultant.
4. A sludge dewatering test should be conducted prior to making a decision on whether to construct the sludge drying beds or to attempt alternative (direct) disposal of a very wet sludge using special water-tight transport vehicles. It is necessary to determine the extent of water removal using the drying beds to predict ultimate handling and disposal methods.

STEP 2...CONSTRUCTION OF SLUDGE DRYING BEDS

STEP 3...REMOVAL OF LAGOON CONTENTS

1. Floating Oil Removal

The free floating oil on the lagoon surface is the first item to be removed. In order to minimize the volume of unwanted water collected with the oil, it is recommended that Shell Oil Company's Oil Herder be used to assist in the oil collection effort. The method of collection should be by vacuum extraction. All oil collected should be transferred to an over-the-road tank truck which, when full, and if approved will transport the oil to the John Deere Component Works for oil reclamation processing. Otherwise it should be disposed at an approved IL EPA landfill.

2. Wastewater Decanting

The bulk liquid in the lagoon will be removed by pumping. Care should be taken to minimize or eliminate removal of sludge solids with the water phase. The pumped water will be piped to the southwest corner of the foundry settling pond. In order to insure that no pollutants are discharged at concentrations exceeding established limits, the maximum flow into the settling pond should not exceed 300 GPM.

3. Sludge Removal & Drying

When as much water is removed as is possible, without removing high levels of sludge solids to the foundry pond, the lagoon is now ready for sludge and contaminated earth extraction.

This operation can probably best be accomplished using a clamshell. The excavated sludge is to be hauled to or placed directly onto the sludge drying bed as soon as it is removed from the lagoons. Placement of the sludge on the bed should be uniform in depth - not to exceed one foot.

All water which is drained from the sludge is collected in the underdrain tile network and flows by gravity back to the lagoon. On an "as required" basis and, after the solids have settled, the water is pumped to the settling pond.

This procedure is repeated until all drainable water is removed from the sludge which has been placed on the drying bed.

STEP 4...DISPOSAL OF DEWATERED SLUDGE

When sufficiently dry, that is, when the sludge has dewatered to the extent that there is minimal free water in the sludge and it can be handled as a solid, the material will be loaded onto trucks and hauled to an approved landfill for ultimate disposal.

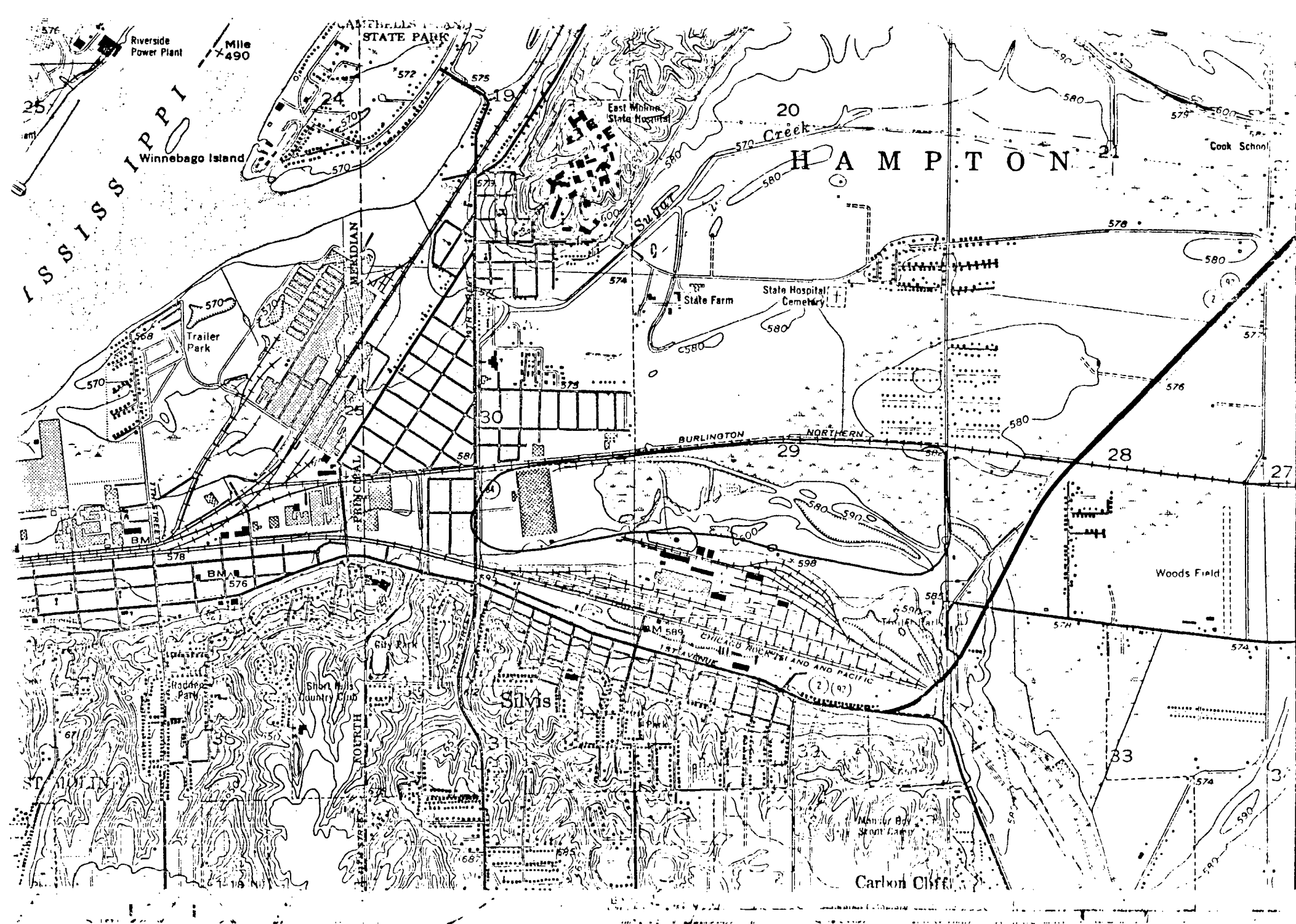
STEP 5...BACKFILLING CLEANED LAGOON

When it has been determined that all sludge has been transported to the final disposal site and the usefulness of the sludge drying beds has been exhausted, the underdrain discharge line to the lagoon will be plugged.

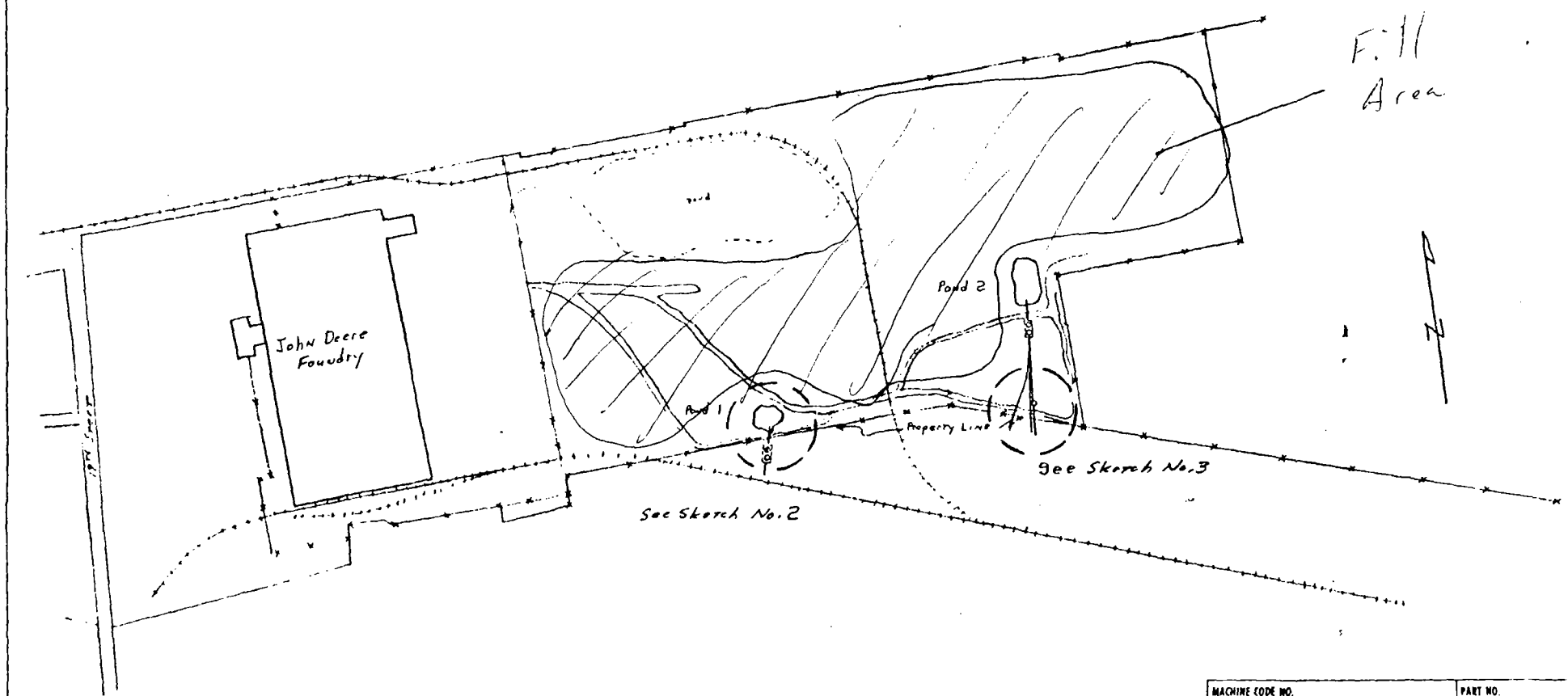
The remaining water will be removed from the lagoon and then it will be filled with foundry sand and/or the rock and sand which made up the drying bed.

STEP 6...POST-CLOSURE MONITORING

In that all contaminated material will be removed to an off-site location, and the fill material used is known to be uncontaminated, no additional monitoring is contemplated.



BILL OF MATERIAL				TOOL NO.	
DETAL	SHEET	DESCRIPTION	ROUGH SIZE OF STOCK	MAT'L	HARD.
PAT.	PUR	REQ'D			

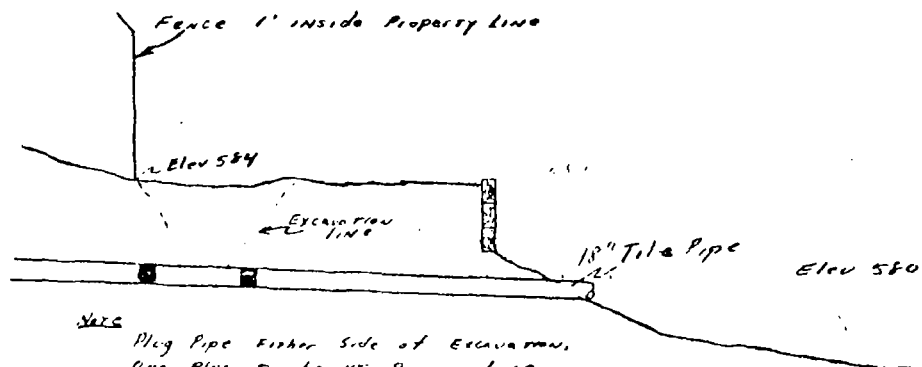


PLAT PLAN
1" = 400'

MACHINE CODE NO.	APPROVED	PART NO.
DECISION	CHECKED	DEPARTMENT NO.
FILE	DRAWN	OPERATION NO.
DATE		SCALE
NAME <u>John Deere Foundry</u>		
<u>Moline, Illinois</u>		
<u>March, 1981</u>		
DEERE & COMPANY ENGINEERING DEPARTMENT MOLINE, ILLINOIS U.S.A.		SHEET NO. <u>1</u> OF <u>4</u> TOOL NO.

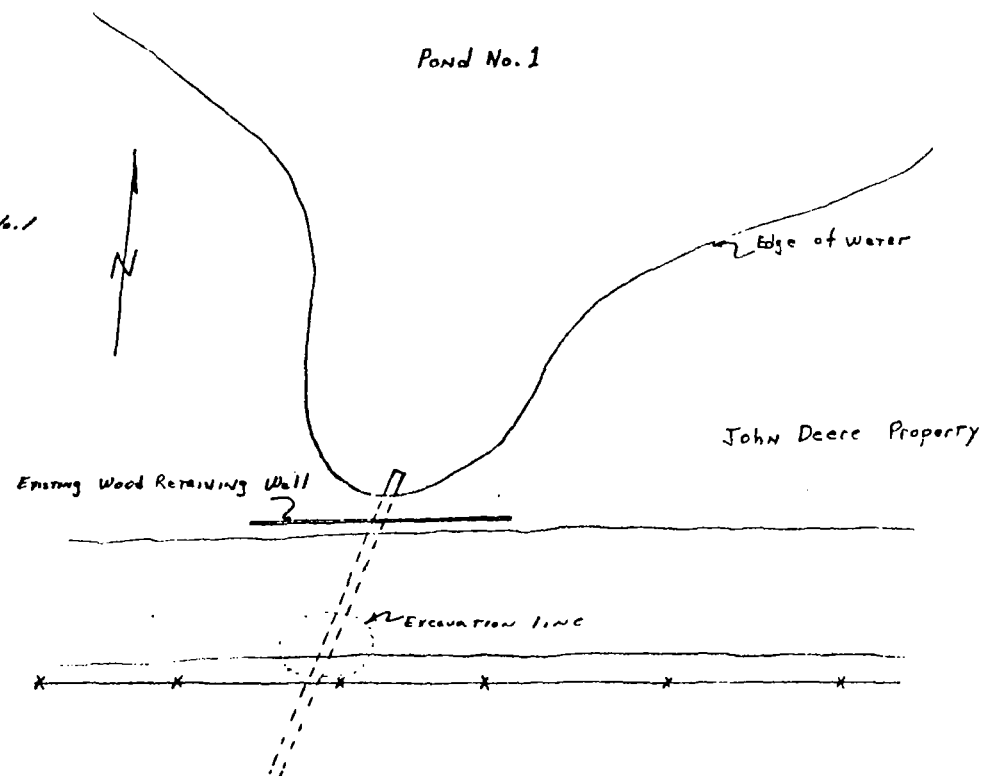
LETTER	DETAL	PAGE	DECISION	DATE	REVISION	BY	CHK'D
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Note: Flow Rate out of Pond No. 1
is Approx. 20-30 gpm.



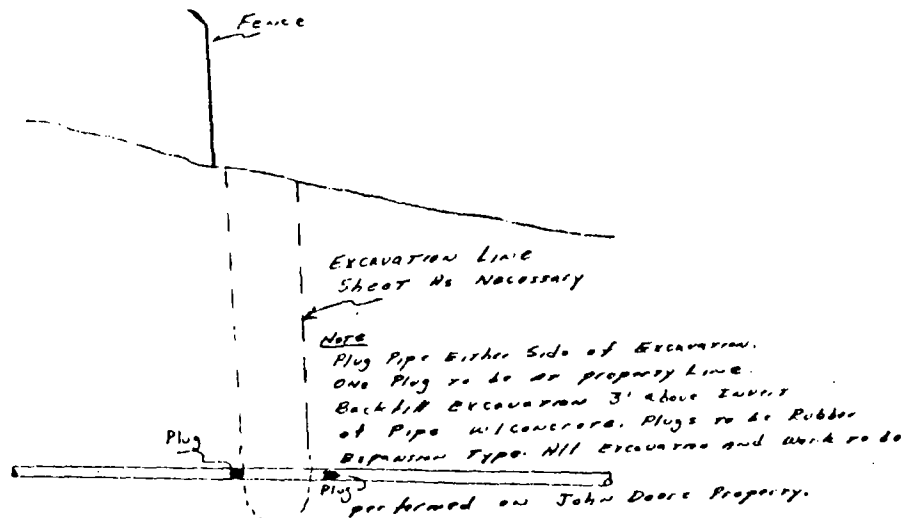
Notes
Plug Pipe Either Side of Excavation.
One Plug to be at Property Line.
Backfill Excavation 3' Above Invert of Pipe
w/Concrete. Plugs to be rubber Expansion
Type. All excavation and work to be
performed on John Deere Property.

No Scale

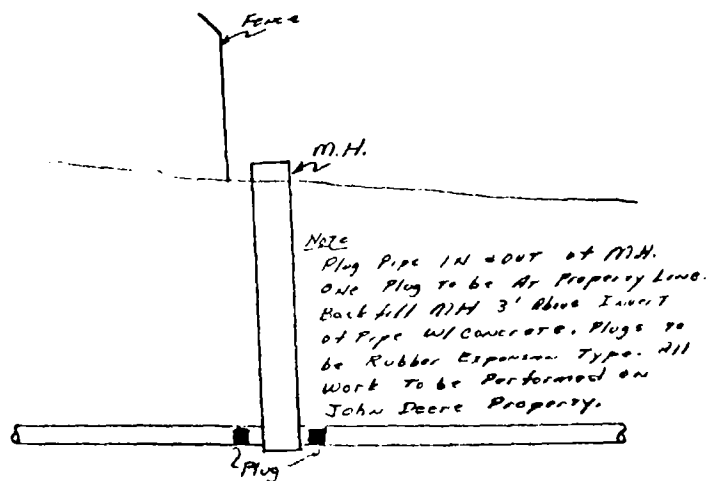


Pond No. 1
John Deere Foundry
East Moline, Illinois

11 Nov. 1981 Sketch No. 2

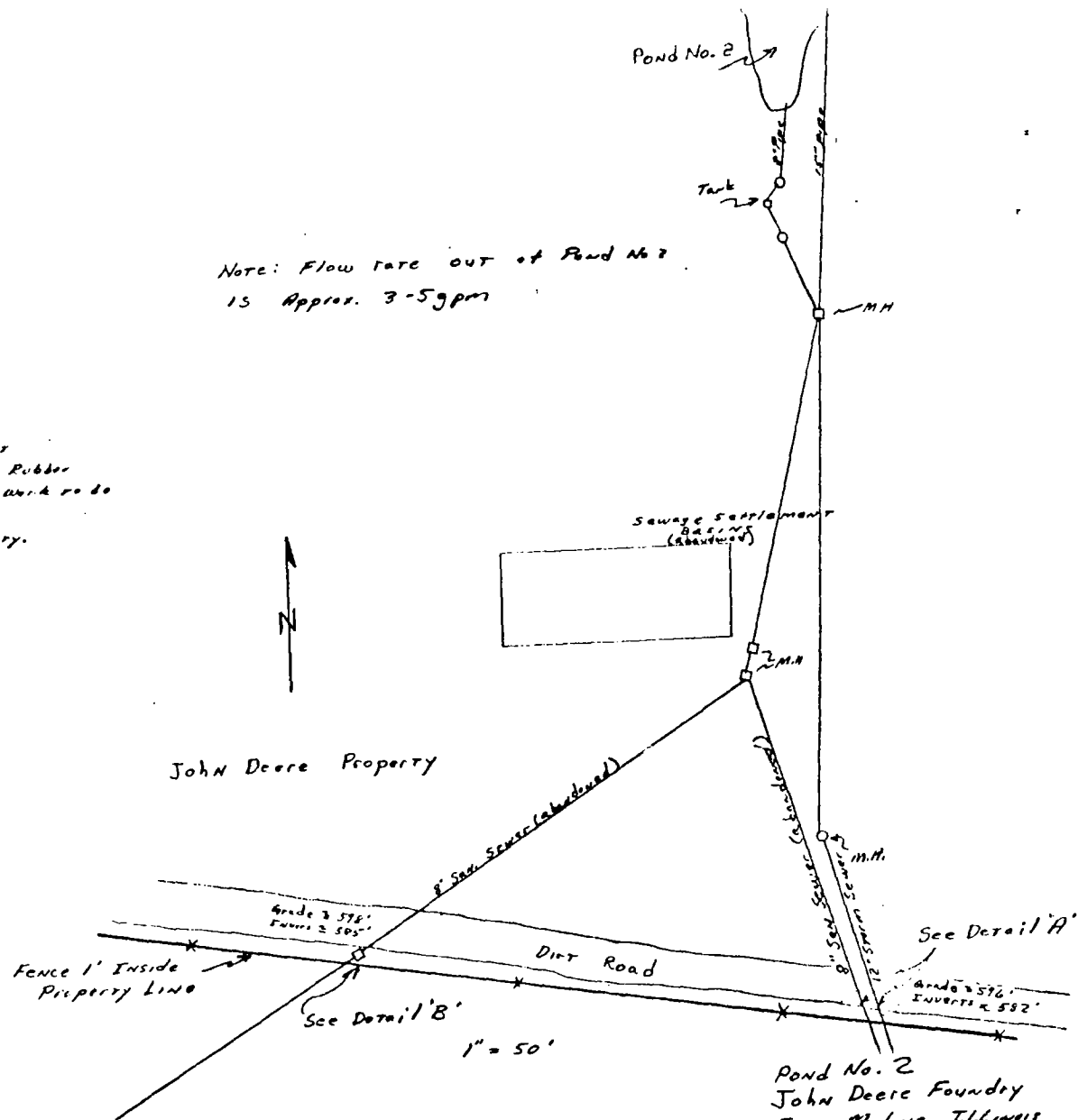


Detail 'A'



Detail 'B'

Note: Flow rate out of Pond No. 2
is Approx. 3-5 gpm



Pond No. 2
John Deere Foundry
East Moline, Illinois
4 Nov. 1981 Sketch No. 3